

A NEW HAWTHORN IN THE MORTON ARBORETUM

CRATAEGUS MORTONIS

Punctatae Series

Species nova

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312 N. Central Ave., Chicago, Ill.

A tree with spreading branches up to 8 m. in height with a stem 23 cm. in diameter. Bark thin, grayish-brown, shallowly fissured into narrow plates. Branchlets normally glabrous, vigorous shoots villose, greenish-brown in their first year, becoming reddish-brown in the following years. Spines on branches 3-6 cm. long, usually about 4 cm. long, simple, slender, nearly straight, lustrous dark reddish-brown; spines on trunks 8-12 cm. long, compound.

Leaves usually broadly obovate, broadest just above the middle, or elliptic, unlobed except for teeth projecting at the ends of primary veins, with a short acute apex or sometimes obtuse, serrate above the broadly cuneate base, 5-9 cm. long, 3-6 cm. wide, firm or thick, dull light or dark green or slightly lustrous above, pale and reticulate-venulose beneath, with a thick, pale midrib and 5-9 pairs of primary veins impressed above; upper surface of young leaves sparsely covered with very short glistening white hairs, becoming glabrous; undersurface of leaves puberulent thruout the season.

Petioles 1-2.5 cm. long, grooved above, winged above the middle, glabrous or slightly villose and glabrate.

Flowers opening about May 25 on villose pedicels in 13-16-flowered corymbs, ill-smelling, 1.4-1.8 cm. wide.

20 stamens with very light pink anthers.

Usually 3-4 pistils, rarely 2.

Calyx-lobes lanceolate, glandular-pectinate.

Receptacle 3 mm. long, covered with long white hairs.

Bracts and bractlets scarious, lanceolate, glandular-serrulate, about 1 cm. long.

Fruit ripening in late August and the first half of September, in erect corymbs with usually 3-5 pedicels, subglobose or short-oblong, glabrous, lustrous red, yellow-red or greenish-red, 10-12 mm. long, (11-)12-13(-14) mm. wide, with tough dry yellow flesh and spreading or erect calyx-lobes. Calyx-tube broad and shallow.

Nutlets 2-4, usually 3, (7-)8 mm. long, (4-)5-8 mm. wide, ridged on the back with about 3 low ridges, with plane ventral faces.

#### CRATAEGUS MORTONIS

Arbor ramis expandentibus 8 m. alta, trunco 23 cm. diametro. Cortex tenuis cinereo-brunneus, leviter fissus in angustas laminas. Ramuli fere semper glabri, vigentes surculi villosi, primo anno viridibrunnei, faciendi rufo-brunnei vetustioribus annis. Spinae in ramis 3-6 cm. longae, plerumque circa 4 cm. longae, simplices, graciles, prope rectae, lucidae fuscae rufo-brunneae; spinae in truncis 8-12 cm. longae, compositae.

Folia plerumque late obovata, latissima super medium, aut elliptica, non lobata praeter dentis prominentis in finibus nervorum lateralium principalium utroque latere, brevi acuto apice aut interdum obtusa, serrata super late cuneatam basim, 5-9 cm. longa, 3-6 cm. lata, firma aut crassa, supra hebetia pallido-viridia aut atroviridia aut leviter lucida, subtus pallida et reticulato-venulosa, costa media crassa pallida et 5-9 nervis lateralibus principalibus utroque latere supra impressis; superficies juvenum foliorum sparsim tecta cum brevissimis lucentibus albis pilis, facienda glabra; inferior facies foliorum puberulens per anni tempus.

Petioli 1-2.5 cm. longi, supra canaliculati, super medium alati, glabri aut leviter villosi et glabrati.

Flores in anthesi circa 25 Maium in villosis pedicellis in corymbis 13-16-floridis, foetidi, 1.4-1.8 cm. lati; staminibus 20 antheris valde

pallido-roseis; pistillis plerumque 3-4, raro 2; calycis lobis lanceolatis glandulari-pectinatis; receptaculo 3 mm. longo tecto cum longis albis pilis; bracteis bracteolisque scariosis lanceolatis glandulari-serrulatis, circiter 1 cm. longis.

Fructus maturescens sero Augusto et primo dimidio Septembris, in erectis corymbis plerumque 3-5 pedicellis, subglobosus aut breviter oblongus, glaber, lucidus ruber, fulvus aut viridi-ruber, 10-12 mm. longus, (11-)12-13(-14) mm. latus, dura sicca lutea carni et calycis lobis expandentibus aut erectis; calycis tubulo lato et tenui; nuculis 2-4, plerumque 3, (7-)8 mm. longis, (4-)5-8 mm. latis, in dorso striatis circa 3 humilibus fastigiis, planis ventralibus faciebus.

### Discussion

The range of this newly discovered species of Hawthorn is confined to the native woods of the Morton Arboretum west of the East Branch of the Du Page River  $1\frac{1}{4}$  miles northwest of Lisle, Ill. Most of the trees, which are numerous, are on the upland south of the creek that flows thru an artificial lake to the river; others are scattered to the northward about as far as the lower slope of Thornhill.

The tree taken as the type tree, which has a diameter of 9 inches and a circumference of 2 feet 6 inches at 54 inches above the ground, a spread of 25 feet and a height of 23 feet, is on the south side of Trail 30 on the ridge 98 feet west of and on the opposite side of the trail from the American Forestry Association's champion Malus ioensis (an extraordinary tree, with a circumference of 4 feet 3 inches). The description is a composite one made to include the characters of a tree at the intersection of Trails 30 and 41, which is 24 feet high and measurements of which have been taken since 1946.

Mortonis attains a large size for a Hawthorn and is exceeded only by mollis, punctata and hillii and is about equal to crus-galli and pedicellata.

The texture and shape of the leaves of mortonis look like the Macracanthae Series. The fruit, however, exceeding 1 cm. in diameter and having firm flesh, is not at all like that series. This

combination of characters, in conjunction with its very restricted range, justifies the assumption that mortonis is of hybrid origin. The species in the vicinity are mollis, punctata and paucispina, none of which, crossing between themselves, could have produced a plant like mortonis.

The leaves of different specimens of mortonis vary from light green to dark green. It is easy to see a similarity between the light green leaves and the leaves of punctata growing nearby, tho there is a difference in the texture. While the fruit is definitely distinguished from punctata by the glandular-pectinate calyx-lobes and the shallow calyx-tube, there is a rough similarity in the color, shape and size. One may therefore conjecture that one of the parent species of mortonis was punctata. No member of the Macracanthae Series is now growing in the vicinity of mortonis, so that there is no present evidence in the field to indicate what the parent species of that series was. Mortonis differs from celsa, the putative hybrid of punctata and succulenta, in the puberulent undersurface of the leaves and the firm flesh of the fruit. One may guess that the parent species was calpodendron. The upland colony of mortonis is growing in the midst of a plantation of hemlocks and yews and it is barely possible that calpodendron, which never exceeds 4 inches in diameter, was cut out. There is no record of a putative hybrid of punctata and calpodendron having been previously described. The blooming period of calpodendron is the latest of any species of Hawthorn in this region, but it overlaps that of punctata by a few days in early June.

Mortonis blossoms rather sparsely. I examined numerous flowers on different trees and found that the characters of all of them were exactly the same, with very light pink anthers. This rigid floral pattern may seem surprising for a taxon of hybrid origin, but it seems to indicate that all these plants descended from a single remote ancestor. It is in striking contrast to calpodendron, no two plants of which I have found with the same color of anthers.

While there are occasional soft spots in the ventral faces of the nutlets, the evidence of ventral cavities is insufficient for mortonis to be placed in

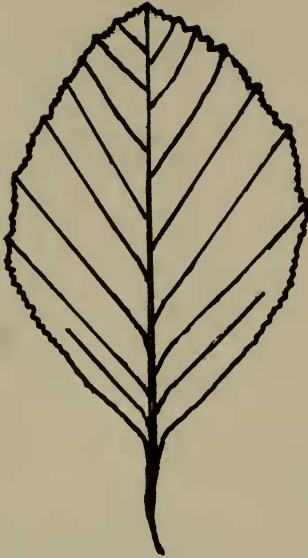
the Macracanthae Series, the basic character of which is the presence of ventral cavities. About forty per cent of the nutlets of fruit picked up off the ground after lying there thru the winter showed ventral cavities; but such evidence is inconclusive because of the possible work of weevils. It seems that mortonis should be placed in the Punctatae Series.

The growth rate of the mortonis tree at the intersection of Trails 30 and 41 is .13 inch of circumference per year. At this rate of growth the type tree is 231 years old. The growth rate of punctata is .31 inch. I have no figures for calpodendron, but the growth rates of two members of the Macracanthae Series are: <sup>2</sup>gemmosa, .05 inch; <sup>2</sup>gaultii, .08 inch. It therefore appears that the growth rate of mortonis is intermediate between punctata and the Macracanthae Series.

Specimen material will be placed in the leading institutional herbaria.

<sup>1</sup>The author does not accept E. J. Palmer's synonymy of paucispina with macrosperma roanensis (Brittonia V.5:5 P.486) because the two species differ in essential characters other than the leaves, viz: paucispina--pedicels sparingly villose, calyx-lobes glandular-serrulate, fruit 1.2-1.5 cm. wide, spines sparse and stout, 12-22 mm. long; macrosperma roanensis--pedicels glabrous, calyx-lobes entire, fruit .7-.9 cm. wide, spines 26-57 mm. long (the latter for macrosperma in <sup>2</sup>Cook Co.).

<sup>2</sup>Gemmosa and gaultii are two distinct types that were placed by E. J. Palmer in his succulenta complex (Brittonia l.c.).



LEAF OF CRATAEGUS MORTONIS  
Three-fourths natural size



FRUIT OF CRATAEGUS MORTONIS  
Three-fourths natural size